

Electronics upgrade meeting

November 30, 2005

1. Intro
2. Current functionality
3. Approach to a new design for the warm electronics for 25 kg stage

Two approaches

- Baseline

Replicate existing system.

We have “Gerber” files
board layout

Can substitute components but no major changes

- New

Analog, digital,
triggering all on one board mounted on e-stem.

Current focus is to replicate existing functionality for stage A.

Partial cost estimate for baseline

Wayne has more details in his spreadsheet

- parts for the existing FEB, \$1,582.93.
- parts for the ZIP-RTF board, \$608.58.
- parts for Power Supply, \$1,782.90.
- +? For board production and assembly
- WAG for cables: \$20,000.00
- Crates at least \$2,000.00 each
- →\$160K, +production/assembly, digitizers, TCB, TLB boards

Features of concept for new electronics

- Analog and digital on one board mounted on e-stem.
- For test-stand use: Plug into wall outlet, connect to USB or Ethernet on laptop.
- Trigger decision on-board using digital signal.

(continued)

- Simplify power supply and minimize power consumption: low noise switching supplies
- Simplify grounding. Isolate ground from PS. Separate ground between A and D sections.
- Isolate digital and analog sections, communicating by differential signals.
- Digital feedback for squids?
- On-board generated test signals

Beyond Stage A

- Squid readout for charge
- Improved time resolution for charge signal
- Capacitance of strip-lines...
- multiplexing
- Length of cable from detector to top (or bottom?) of tower.
- In general, cryostat design and long-term electronics plans need to be compatible.